UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005

August 18, 2006

J. V. Parrish (Mail Drop 1023)
Chief Executive Officer
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000397/2006008

Dear Mr. Parrish:

On March 30, 2006, the Nuclear Regulatory Commission (NRC) completed the onsite portion of an inspection at the Columbia Generating Station. The enclosed report documents the inspection findings, which were discussed in a debrief meeting at the end of the onsite inspection on March 30, 2006, with Mr. S. Oxenford and other members of your staff and again in an exit meeting conducted via conference call on July 13, 2006 with Mr. T. Lynch and other members of your staff.

During this triennial fire protection inspection, the inspection team examined activities conducted under your license related to safety and compliance with the Commission's rules and regulations and the conditions of your license. The inspection consisted of selected examination of procedures and records, observations of activities and installed plant systems, and interviews with personnel.

During the inspection, an apparent violation related to compliance with the requirements of the approved Fire Protection Program was identified. This finding involved inadequate analysis of circuits relied upon for post-fire safe shutdown. These circuit vulnerabilities, could, under certain postulated fire scenarios, adversely affect the ability to achieve and maintain safe shutdown of the facility. It is the NRC's understanding that you do not consider these vulnerabilities to be violations of NRC requirements. In order to allow the industry to develop an acceptable approach to resolving this issue, that the NRC can endorse, the NRC will defer any enforcement action relative to these matters while the staff evaluates NEI's proposed resolution methodology for circuit vulnerabilities and you have time to implement the resolution methodology, once approved, provided you take adequate compensatory measures for the identified vulnerabilities.

Based on the results of this inspection, the NRC also identified one finding that was evaluated as having very low safety significance (Green). The NRC has determined that this finding involved a violation of NRC requirements. This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. This noncited violation is

described in the subject inspection report. If you contest the violation or the significance of this violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Columbia Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Linda Joy Smith, Chief
Engineering Branch 2
Division of Reactor Safety

Docket: 50-397
License: NPF-21

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Inspection Report 05000397/2006008
w/Attachment: Supplemental Information

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SUNSI Review Completed: __Yes_ ADAMS: / Yes ☐ No Initials: __LJS___
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RIV:DRS/EB2	RIV:DRS/EB2	RIV:DRS/EB2	RIV:DRS/EB2
HAbuseini	DLLivermore	DSzwarc	GPick
/RA/	***/RA/***	***E=DS***	***/RA/***
8/1/06	7/31/06	7/31/06	7/31/06

RIV:DRS/EB2	C:DRP/A	C:DRS/PEB	
JMMateychick	CEJohnson	LJSmith	
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-397
License:	NPF-21
Report No.:	05000397/2005-009
Licensee:	Energy Northwest
Facility:	Columbia Generating Station
Location:	Richland, Washington
Dates:	March 13 through July 13, 2006
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Approved By:	Linda Joy Smith, Chief Engineering Branch 2, Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000397/2006008; 3/13/06 - 7/13/06; Energy Northwest; Columbia Generating Station; Fire Protection (Triennial)

The NRC conducted an inspection with a team of four regional inspectors and one contractor. The inspection identified one Green noncited violation (NCV), one apparent violation (AV) and one unresolved item (URI). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using MC 0609 "Significance Determination Process" (SDP). Findings for which the significance determination process does not apply may be Green or may be assigned a severity level after NRC management review. The NRC describes its program for overseeing the safe operation of commercial nuclear power reactors in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self Revealing Findings

Cornerstone: Mitigating Systems

- Green. The team identified a noncited violation (NCV) of License Condition 2.C.(14), Fire Protection Program (Generic Letter 86-10), for failure to ensure that redundant trains of safe shutdown systems in the same fire area were free of fire damage. Columbia Generating Station's approved fire protection program committed to comply with the requirements of Section III.G of 10 CFR 50, Appendix R. Section III.G.2 of Appendix R requires that cables whose fire damage could prevent the operation or cause maloperation of safe shutdown functions be physically protected from fire damage. Contrary to this requirement, the licensee implemented a methodology that utilized manual operator actions for fires in areas other than the control room to mitigate the effects of fire damage in lieu of providing physical protection from fire damage. This finding was entered into the licensee's corrective action program under Condition Report 2-06-02347.

  This finding is of greater than minor safety significance because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. The team found that the manual operator actions were reasonable (as defined in Enclosure 2 of Inspection Procedure 71111.05T), and could be performed within the analyzed time limits. Since the manual operator actions were considered reasonable, the significance determination process was not entered. The team determined that this finding is of very low safety significance (Green) in accordance with the guidance in Enclosure 2 to Inspection Procedure 71111.05T. (Section 1R05.2)

- Green. The team identified an apparent violation (AV) of License Condition 2.C.(14) concerning failure to assure that the effects of fire damage on the reactor protection system would not preclude manual scram capability relied upon in the approved fire protection program. Although the reactor protection and control rod drive systems were identified as part of the minimum safe shutdown systems necessary to accomplish the reactivity control shutdown function, and were credited in the post-fire safe shutdown

procedures developed by the licensee, the potential for fire to cause a loss of this required shutdown function had not been evaluated. The licensee's post-fire safe shutdown analysis included the assumption that the operator would initiate and confirm shutdown before control circuits were damaged, therefore, evaluation of the effects of fire damage to the reactor protection (RPS) and control rod drive (CRD) systems was not necessary. This finding was entered into the licensee's corrective action program under Condition Report 2-06-05147.

The finding is greater than minor because it affected Mitigating Systems cornerstone attribute of protection against external factors (e.g., fire) because it impacted the ability to achieve and maintain hot shutdown following a control room fire because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. Specifically, the licensee did not evaluate the potential effects of fire damage on circuits required to accomplish the reactivity control shutdown function necessary to achieve post-fire safe shutdown. It is the NRC's understanding that the licensee does not consider these circuit vulnerabilities to be violations of NRC requirements. The licensee considers multiple hot shorts due to fire in the control room to be outside of the plant licensing basis for the Fire Protection Program. Specifically, in this case, two hot shorts due to fire induced circuit damage would be required to prevent the scram of one rod group. This violation satisfied the criteria of the NRC Enforcement Manual Section 8.1.7.1.a for deferring enforcement actions for postulated fire induced circuit failures. This violation is being treated as an apparent violation. (Section 1R05.7.b(1))

B. Licensee-Identified Violations

None

REPORT DETAILS

1 REACTOR SAFETY

1R05 Fire Protection

The purpose of this inspection was to review the Columbia Generating Station's fire protection program for selected risk-significant fire areas. Emphasis was placed on verification of the post-fire safe shutdown capability. The inspection was performed in accordance with the NRC regulatory oversight process using a risk-informed approach for selecting the fire areas and attributes to be inspected. The team used the Fire Probabilistic Safety Analysis for the Columbia Generating Station to choose risk-significant areas for detailed inspection and review. Inspection Procedure 71111.05T, "Fire Protection (Triennial)," requires selecting three to five fire areas for review. The three fire areas reviewed during this inspection were:

R-1 Reactor Building (northwest 471 ft elevation)

RC-4 Division 1 Electrical Equipment Rooms (467 ft elevation)

RC-8 Switchgear Room No. 2 (467 ft elevation)

For each of these fire areas, the inspection focused on fire protection features, systems and equipment necessary to achieve and maintain safe shutdown conditions, and licensing basis commitments.

Documents reviewed by the team are listed in the attachment.

.1 Shutdown From Outside Main Control Room

a. Inspection Scope

The team reviewed the licensee's methodology for achieving and maintaining post-fire safe shutdown to ensure that at least one post-fire safe shutdown success path was available in the event of a fire in each of the selected areas. The principal sources of this information were the Final Safety Analysis Report, Appendix F, "Fire Protection Evaluation" and calculation NE-02-895-19, "Post Fire Safe Shutdown (PFSS) Analysis". The team focused on the following functions that must be available to achieve and maintain post-fire safe shutdown conditions:

- Reactivity control capable of achieving and maintaining cold shutdown reactivity conditions,
- Reactor coolant makeup capable of maintaining the reactor coolant inventory,
- Reactor heat removal capable of achieving and maintaining decay heat removal, and

- Supporting systems capable of providing all other services necessary to permit extended operation of equipment necessary to achieve and maintain hot shutdown conditions.

To assure the licensee had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for equipment in the fire areas selected for review, piping and instrumentation diagrams were reviewed and compared to the list of safe shutdown equipment documented in the licensee's post-fire safe shutdown analysis and referenced supporting calculations. In addition, plant drawings, operating procedures, operator lesson plans, and other relevant documents were reviewed to verify the flow paths and operational characteristics of systems relied on to accomplish required safe shutdown functions.

For each of the above functions, the team verified that the licensee's methodology had properly identified the primary and support systems needed to satisfy the requirements. The team verified that specific safe shutdown (SSD) functions can be achieved and maintained with or without off-site power.

Systems required to achieve and maintain safe shutdown include:

- The reactor protection (RPS) and control rod drive (CRD) systems for performing the scram function.

- The automatic depressurization system (ADS) for reducing reactor system pressure by depressurizing into the suppression pool (using a minimum of five ADS valves).

- The residual heat removal (RHR) system in the alternate shutdown cooling mode to remove decay heat and maintain the suppression pool temperature below limits. This mode of operation utilizes the suppression pool as the suction source and pumps water to the residual heat exchangers and then through the low pressure coolant injection path into the reactor.

- The standby service water (SSW) system to provide cooling water to the RHR system and essential plant equipment (e.g., emergency diesel generator).

b. Findings

No findings of significance were identified.

.2 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the piping and instrumentation diagrams, safe shutdown equipment list, safe shutdown design basis documents, and the post-fire safe shutdown analysis to verify that the shutdown methodology had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for equipment in

the fire areas selected for review. The team also reviewed and observed walkdowns of the procedures for achieving and maintaining safe shutdown in the event of a fire to verify that the safe shutdown analysis provisions were properly implemented. The team focused on the following functions that must be ensured to achieve and maintain post-fire safe shutdown conditions: (1) reactivity control capable of achieving and maintaining cold shutdown reactivity conditions, (2) reactor coolant system isolation for the preservation of inventory, (3) reactor coolant system depressurization to allow the use of low pressure injection, (4) reactor heat removal capable of achieving and maintaining decay heat removal, (5) supporting systems capable of providing all other services necessary to permit extended operation of equipment necessary to achieving and maintaining cold shutdown conditions, and (6) process monitoring capable of providing direct readings to perform and control the above functions.

The team reviewed the separation of safe shutdown cables, equipment, and components within the same fire areas, and reviewed the methodology for meeting the requirements of 10 CFR 50.48, Appendix A to Branch Technical Position 9.5-1 and 10 CFR Part 50, Appendix R, Section III.G. Specifically, this was to determine whether at least one post-fire safe shutdown success path was free of fire damage in the event of a fire in the selected areas. The evaluation focused on the cabling of selected components for the main steam system, the automatic depressurization system, and the residual heat removal system. A sample of components was selected whose inadvertent operation could significantly affect the shutdown capability credited in the safe shutdown analysis. The specific components selected are listed in the attachment. In addition, the team reviewed licensee documentation, such as NRC safety evaluation reports, the Columbia Generating Station Final Safety Analysis Report, submittals made to the NRC by the licensee in support of the NRC's review of their fire protection program, and deviations from NRC regulations to verify that the licensee met license commitments.

b. Findings

Introduction. The team identified a noncited violation of License Condition 2.C.(14), "Fire Protection Program (Generic Letter 86-10)," for failure to ensure that redundant trains of safe shutdown systems in the same fire area were free of fire damage. The licensee credited manual actions to mitigate the effects of fire damage in lieu of providing the physical protection required by 10 CFR Part 50, Appendix R, Section III.G.2.

Description. License Condition 2.C. (14) states, "The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in Section 9.5.1 and Appendix F of the Final Safety Analysis Report (FSAR) for the facility thru Amendment No. 39 and as described in subsequent letters to the staff through November 30, 1988, referenced in the May 22, 1989 safety evaluations and in other pertinent sections of the FSAR referenced in either Section 9.5.1 or Appendix F and as approved in the Safety Evaluation Report issued in March 1982 (NUREG 0892) and in Supplements 3, issued in May 1983, and 4, issued in December 1983, and in safety evaluations issued with letters dated November 11, 1987 and May 22, 1989 subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The Safety Evaluation Report (NUREG 0892), Section 9.5.1.5(2), "Safe Shutdown Capability," states: (1) "In the safe shutdown analysis, the applicant states that systems needed for hot shutdown and cold shutdown are redundant and that one of the redundant systems needed for safe shutdown would be free of fire damage, by providing separation, fire barriers and/or alternative shutdown capability."; (2) "The applicant has provided a cable separation review for all rooms of the plant housing safe shutdown equipment to ensure that at least one train of this equipment is available in the event of a fire in any of these rooms."; (3) "The staff has reviewed the applicant's deterministic review of the plant and concludes that it is an acceptable means of demonstrating that separation exists between redundant safe shutdown system trains."; and (4) "Based of the above, the staff concludes that the shutdown capability complies with the requirements of Section III.G of Appendix R and is, therefore, acceptable."

The NRC letter dated November 11, 1987 responded to the submittal of Amendment 37 of the Final Safety Analysis Report. This letter states "We find that with the exception of twenty-eight items which are noted in our review to remain open, the proposed methods of providing fire protection and safe shutdown capability for WNP-2 will satisfy the criteria of Appendix A to BTP APCSB 9.5-1 and the requirements of 10 CFR Part 50 Appendix R, Items III.G and III.L." In the attached Safety Evaluation Report, Section 3.1, "Systems Required for Safe Shutdown," the NRC staff stated "Thus, for a fire in any fire area (except the control room), the fire would affect only one division and the redundant division's components would be available and controlled from the control room." Further, in Section 3.3.3, "Manual Actions," which discusses in detail the manual actions during a fire requiring a control room evacuation, the NRC staff stated "For a fire in any fire area other than in the control room (Fire Area RC-X), the licensee will require no manual actions outside of the control room."

The team reviewed Procedure ABN-FIRE, "Fire," Revision 12, and walked through the required actions with both licensed and non-licensed operators. This procedure is used for safe shutdown for all fires other than a fire in the control room. The team found that manual actions outside of the control room were being relied upon to achieve safe shutdown contrary to the approved fire protection program. The components being operated were identified as required for operation of safe shutdown systems or were subject to potential spurious operation impacting the shutdown. The local manual actions were being performed because of fire damage to electrical cables related to those components and were meant to compensate for damage or maloperation of safe shutdown equipment caused by fire. Manual actions are not a method of satisfying 10 CFR 50, Appendix R, Section III.G.2 requirements. Plant specific manual actions may only be acceptable if the NRC approve exemptions or deviations for each case identified. The licensee entered this finding into its corrective action program under Condition Report No. 2-06-02347.

Analysis. This finding is of greater than minor safety significance because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. The team reviewed Procedure ABN-FIRE, "Fire," and walked down the manual actions directed in the procedure with licensee operations personnel. The team found that the manual operator actions were reasonable (as defined in Enclosure 2 of Inspection Procedure 71111.05T), and could be performed within the analyzed time limits. Since the manual operator actions were considered reasonable, the significance determination process was not entered. The team determined that this finding is of very low safety significance (Green) in accordance with the guidance in Enclosure 2 to Inspection Procedure 71111.05T.

Enforcement. The Columbia Generating Station's approved fire protection program committed to comply with the requirements of Section III.G of 10 CFR 50, Appendix R. Section III.G.2 of Appendix R requires that cables for redundant safe shutdown equipment located in the same fire area whose fire damage could prevent the operation or cause maloperation of safe shutdown functions shall be physically protected from fire damage. Contrary to this requirement, the licensee implemented a methodology that utilized manual operator actions to mitigate the effects of fire damage in lieu of providing physical protection from fire damage for fires other than a control room fire. This was a violation of License Condition 2.C.(14) for failing to meet the technical requirements of 10 CFR 50, Appendix R, Section III.G.2. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program under Condition Report 2-06-02347, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy:
NCV 05000397/2006008-01, Failure to Ensure Redundant Safe Shutdown Systems Located in the Same Fire Area Are Free of Fire Damage.

.3 Passive Fire Protection

a. Inspection Scope

For the selected fire areas, the team evaluated the adequacy of fire area barriers, penetration seals, fire doors, electrical raceway fire barriers and fire rated electrical cables. The team observed the material condition and configuration of the installed barriers, seals, doors, and cables. The team compared the as-installed configurations to the approved construction details and supporting fire tests. In addition, the team reviewed licensee documentation, such as NRC safety evaluation reports, and deviations from NRC regulations and the National Fire Protection Association codes to verify that fire protection features met license commitments.

b. Findings

No findings of significance were identified.

.4 Active Fire Protection

a. Inspection Scope

For the selected fire areas, the team evaluated the adequacy of fire suppression and detection systems. The team observed the material condition and configuration of the installed fire detection and suppression systems. The team reviewed design documents and supporting calculations. In addition, the team reviewed licensee basis documentation, such as NRC safety evaluation reports, and deviations from NRC regulations and the National Fire Protection Association codes to verify that fire suppression and detection systems met license commitments.

b. Findings

No findings of significance were identified.

.5 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

For the sample areas, the team verified that redundant trains of systems required for hot shutdown were not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems including the effects of flooding.

b. Findings

No findings of significance were identified.

.6 Alternative Shutdown Capability

a. Inspection Scope

The team reviewed the alternative shutdown methodology to determine if the licensee properly identified the components, systems, and instrumentation necessary to achieve and maintain safe shutdown conditions from the remote shutdown panel and alternative shutdown locations. The team focused on the adequacy of the systems selected for reactivity control, reactor coolant system isolation, reactor coolant system depressurization, reactor heat removal, process monitoring and support system functions. The team verified that cold shutdown from outside the control room could be achieved and maintained with offsite power available or not available. The team verified that the transfer of control from the control room to the alternative locations was not affected by fire induced circuit faults by reviewing the provision of separate fuses for alternative shutdown control circuits.

The team also reviewed the operational implementation of the alternative shutdown methodology. Team members observed a timed walk-through of the control room evacuation procedures with watchstanders consisting of both licensed reactor operators and non-licensed operators. The team observed operators simulate performing the steps of Procedure ABN-CR-EVAC "Control Room Evacuation and Remote Cooldown, " Revision 8, that provided instructions for performing an alternative shutdown from the remote shutdown panel and for manipulating equipment in the plant. The team verified

that the minimum number of required operators, exclusive of those required for the fire brigade, could reasonably be expected to perform the procedural actions within the applicable plant shutdown time requirements and that equipment labeling was consistent with the procedure. Also, the team verified that procedures, tools, dosimetry, keys, lighting, and communications equipment were available and adequate to support successfully performing the procedure as intended. The team also reviewed records for operator training conducted on this procedure.

The team reviewed the time-critical manual actions identified by the licensee as being necessary to support alternate shutdown from outside the control room. Calculations and analyses which provided the bases for these critical times were also reviewed. The simulated completion times recorded during the procedure walk-through were then compared to the analytical values to verify that the procedure could be implemented as intended.

b. Findings

No findings of significance were identified.

.7 Circuit Analyses

a. Inspection Scope

The team reviewed the licensee's post-fire safe shutdown analysis to verify that the licensee had identified both required and associated circuits that may impact safe shutdown. On a sample basis, the team verified that cables of equipment required to achieve and maintain hot shutdown conditions in the event of fire in selected fire zones had been properly identified. In addition, the team verified that these cables had either been adequately protected from the potentially adverse effects of fire damage, mitigated with approved manual operator actions, or analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown. In order to accomplish this, the team reviewed electrical schematics and cable routing data for power and control cables associated with each of the selected components.

Since the licensee utilizes thermoset cables, the team reviewed the following cable failure modes for selected required and associated circuits:

- Spurious actuations due to any combination of conductors within a single multiconductor cable;

- A maximum of two cables considered where multiple individual cables may be damaged by the same fire;

- For cases involving direct current control circuits, the potential spurious operation due to failures of the control cables (even if the spurious operation requires two concurrent shorts of the proper polarity, e.g., plus-to-plus and minus-to-minus); and

- For cases involving decay heat removal system isolation valves at high-pressure/low-pressure interfaces, the vulnerability of three-phase power cables due to three-phase proper polarity hot shorts.

In addition, on a sample basis, the adequacy of circuit protective coordination for the safe shutdown 4KV and 480V systems and the 120VAC instrumentation bus was evaluated. Also, on a sample basis, cable trays that contained both safe shutdown and non-safe shutdown cables were evaluated for proper circuit protection to ensure that cables were protected by a proper protective device in order to preclude common enclosure concerns.

b. Findings

(1) Failure to Assure That the Effects of Fire Damage on the Reactor Protection System Would Not Preclude Manual Scram Capability

Introduction. The team identified an apparent violation of License Condition 2.C.(14) concerning failure to assure that the effects of fire damage on the reactor protection system would not preclude manual scram capability relied upon in the approved fire protection program.

Description: The team reviewed the licensee's evaluation of the reactor protection system circuits relied upon for reactor scram capability. Although the reactor protection and control rod drive systems were identified as part of the minimum safe shutdown systems necessary to accomplish the reactivity control shutdown function, and were credited in the post-fire safe shutdown procedures developed by the licensee, the potential for fire to cause a loss of this required shutdown function had not been evaluated. Final Safety Analysis Report, Amendment 57, Section F.4.3 stated "Fail safe circuits (electrical divisions 4, 5, 6, and 7) are designed to fail in a safe manner if subjected to fire damage. For example, reactor scram, once initiated, cannot be overridden as a consequence of fire." As described in Section 6.2.1 of Design Specification 209, "Design Specification for Post-fire Safe Shutdown," the licensee's analysis was "based on the assumption that the operator would initiate and confirm shutdown before control circuiting is damaged," therefore, evaluation of the effects of fire damage to the reactor protection (RPS) and control rod drive (CRD) systems was not necessary.

The inspection team disagreed with the licensee's assumption since fires can potentially damage circuits prior to the decision to initiate a plant shutdown. In its response to this concern, the licensee stated that since operator actuation of a manual scram establishes "time zero" for a shutdown scenario, no circuit failures are assumed to occur prior to this time. The inspection team disagreed with this interpretation of "time zero." The use of operator actuation of a manual scram to establish "time zero" for a shutdown scenario is a commonly used approach for developing thermo-hydraulic analysis to confirm the ability to perform a post-fire safe shutdown with the systems available. Post-fire safe shutdown procedures are also evaluated from the same "time zero" to confirm the functions can be performed within the required times established in the thermo-hydraulic analysis. This practice does not confirm that potential fire damage

cannot occur prior to the manual scram. Therefore, all systems relied upon for post-fire safe shutdown must be evaluated for the potential effects of fire damage.

As described in procedure ABN-FIRE, a reactor shutdown would not be initiated unless:

• there are indications that the fire threatens safe operation of the plant,
• the operator observes degraded equipment performance, or
• there is visible damage to vital plant equipment or cabling.

Since a reactor scram would not likely be initiated until the fire had damaged vital plant equipment, the inspection team did not concur with the licensee's position that operator actuation of a manual scram establishes "time zero" for a shutdown scenario and no circuit failures are assumed to occur prior to this time.

The control rods are divided into four control rod groups. The scram of each control rod group is controlled by separate circuits within the RPS system. The system design has two trip logic channels functioning in a 1 out of 2 twice arrangement. This design requires that one trip logic be satisfied in both trip logic channels before the control rod group will scram. The RPS circuits are a fail safe design in that the circuits are normally energized and the loss of power will initiate a scram. Also, the RPS scram circuits are routed separately from other circuits to prevent any potential for interaction.

In response to the team's questions, the licensee reviewed the scram circuits for potential effects of fire damage. For all fires other than a control room fire, the licensee concluded that circuits will be de-energized when the mode switch in the control room is placed in shutdown and circuit damage could not prevent the scram. For fires in the control room, a hot short between conductors to the mode switch could keep the associated trip channel logic energized. Two hot shorts without the occurrence of an open circuit or short to ground have the potential of affecting the scram function. A hot short as described above would have to be present in both of the trip channel logic circuits associated with the same trip channel. This would keep the trip channel energized so that half of the 1 out of 2 twice logic would not be satisfied. The results would be that the associated rod group would not scram. The other three rod groups would not be affected and would scram as expected.

Analysis. The inspectors referred to the guidance of MC 0612 and determined that the finding is greater than minor in that it affected the ability to achieve and maintain hot shutdown following a control room fire. This finding is associated with the Mitigating Systems cornerstone and the respective attribute of protection against external factors (e.g., fire). This finding impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. Specifically, the licensee did not evaluate the potential effects of fire damage on circuits required to accomplish the reactivity control shutdown function necessary to achieve post-fire safe shutdown. This performance deficiency could result in the failure to trip one control rod group during certain fire damage scenarios. This would be expected to shut down the reactor initially, but the reactor might restart if cooldown or emergency depressurization occurred.

During the inspection, the licensee contended that only one hot short needed to be considered for a control room fire per Columbia's approved fire protection program. The design of alternative shutdown capability was based on Section F.4.4.1, "Design Basis," in WNP-2 FSAR, Amendment No. 37 which states, in part, "This assumes, of course, that the criteria of Generic Letter 86-10 Sections 5.3.10a and 5.3.10b apply, i.e., only 'one worst case spurious actuation' need be considered at any one time." Section 5.3.10a of Generic Letter 86-10 states "The safe shutdown capability should not be adversely affected by any one spurious actuation or signal resulting from a fire in any plant area."

The team did not agree with this interpretation since the potential concern would be caused by fire damage preventing operation of circuits required for safe shutdown. The team did not consider hot shorts preventing RPS circuits from de-energizing to be a spurious actuation or signal. Further, Generic Letter 86-10 calls for the identification of the one worst case spurious actuation or signal for designing the alternative shutdown system to be able to compensate for such damage. Generic Letter 86-10 does not prescribe the number or combinations of open circuits, shorts to ground or hot shorts which could combine to cause one spurious actuation which should be considered in the analysis.

Based on their interpretation of Columbia's licensing basis, the licensee initially did not see a need to establish compensatory measures to confirm or assure insertion of all control rods after evacuating the control room. The licensee entered this finding into its corrective action program under Condition Report No. 2-06-02397. The team reviewed the alternative shutdown process and noted that: (1) Procedure ABN-CR-EVAC lists attachments which must be completed to confirm the plant is ready for emergency depressurization; (2) A step is performed to de-energizes the power supplies to the RPS system outside of the control room which would result in a scram. However, this step was not required to be completed prior to an emergency depressurization. Licensee calculation NE-02-85-19, "Post Fire Safe Shutdown Analysis," Section I1l, "Time Line," documented the time for reactor water level to decrease to the top of active fuel and emergency depressurization initiated as approximately 20 minutes after the scram in the control room. The licensee confirmed that the RPS system would be de-energized in approximately 11 minutes based on the timed walkdown. The licensee revised procedure ABN-CR-EVAC to assure that this step would be completed and thus assure a full scram prior to an emergency depressurization, which adequately corrected the problem.

Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," states that it excludes findings associated with control room evacuation. Therefore, in accordance with Manual Chapter 0609, the safety significance of this issue was determined by regional management review. This review concluded this finding was of very low safety significance (Green) because the team confirmed that the RPS system would be reliably de-energized prior to an emergency depressurization.

Enforcement: License Condition 2.C.(14) states, "The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in Section 9.5.1 and Appendix F of the Final Safety Analysis Report (FSAR) for the facility

thru Amendment No. 39 and as described in subsequent letters to the staff through November 30, 1988, referenced in the May 22, 1989 safety evaluation and in other pertinent sections of the FSAR referenced in either Section 9.5.1 or Appendix F and as approved in the Safety Evaluation Report issued in March 1982 (NUREG 0892) and in Supplements 3, issued in May 1983, and 4, issued in December 1983, and in safety evaluations issued with letters dated November 11, 1987 and May 22, 1989 subject to the following provision:

"The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."

Final Safety Analysis Report Section F.4.3, "Post-Fire Safe Shutdown" states "The systems and equipment which are designated as post-fire safe shutdown equipment represent the minimum equipment which is necessary to bring the plant to a safe cold shutdown condition in the event of a fire in any area of the plant. Only that portion of post-fire safe shutdown equipment which is expected to be free of fire damage is credited for post-fire safe shutdown, although other plant systems and equipment could also be available for use after a fire."

Contrary to the above, the licensee did not did not assure that the potential affects of fire damage on the RPS circuits would not preclude the ability to perform a manual reactor scram. Specifically, in this case, two hot shorts due to fire induced circuit damage could potentially prevent the scram of one rod group. It is the NRC's understanding that the licensee does not consider these circuit vulnerabilities to be violations of NRC requirements. The licensee considers multiple hot shorts due to fire in the control room to be outside of the plant licensing basis for the Fire Protection Program. The NRC staff and the industry are currently working on developing a resolution methodology to address these types of potential fire circuit failures.. This finding was entered into the licensee's corrective action program under Condition Report 2-06-05147. The team's review concluded that this violation meets the criteria of the NRC Enforcement Manual Section 8.1.7.1.a for deferring enforcement actions for postulated fire induced circuit failures because the licensee took compensatory measures. This violation is being treated as an apparent violation: AV 05000397/2006008-02, Failure to Assure That the Effects of Fire Damage on the Reactor Protection System System Would not Preclude Manual Scram Capability.

(2) Inadequate Evaluation of the Effects of Fire on Instrument Sensing Lines

Introduction. The team identified an unresolved item related to compliance with the approved fire protection program for failure to adequately evaluate the potential effect of fire on instrument sensing lines (mechanical tubing). This will be treated as an unresolved item pending further inspection and determination of safety significance.

Description. The team reviewed the licensee's evaluation of instrument sensing lines for potential affects of a fire. The NRC letter dated November 11, 1987 responded to the submittal of Amendment 37 of the Final Safety Analysis Report. Section 2.3, "Protection of Safe Shutdown System" stated "In the SER and supplements, the staff evaluated the

methods used to protect safe shutdown systems from fire damage. In Amendment 37, the licensee stated that protection for stainless steel instrument and sensing lines is not necessary because the areas through which these lines pass have an average fire loading less than one-half hour. This justification is inadequate because it ignores locations within the area where concentrated combustibles may exist which could produce a fire of significant intensity so as to damage the lines. The licensee should either more fully justify the existing level of protection for these lines or provide additional fire protection in accordance with Section C.5.b. of BTP CMEB 9.5-1. This issue remains open." In the summary of open issues, the NRC staff further stated: "The licensee should justify the conclusion that instrument and sensing lines will remain free of fire damage in the absence of fire protection features stipulated in Section III.G of Appendix R to 10 CFR 50. (Reference page F.2-7)"

If sensing lines were subjected to elevated temperatures, they might fail as a result of mechanical damage or the density of the internal process fluid could change, resulting in erratic instrument indications and/or false actuation signals. Section III.G.1 of Appendix R requires that one train of systems and equipment necessary to achieve and maintain hot shutdown conditions be free of fire damage. Verification that sensing lines of redundant instrument channels are appropriately separated and/or protected from the heat caused by fire is, therefore, necessary to ensure that one train of required shutdown systems remains free of fire damage. The team identified that sensing lines for required process instrumentation were found to be routed together in close proximity within Fire Area R1. A specific example is the sensing lines for RHR flow instruments (RHR-FI-R603A and RHR-FI-R603B).

Final Safety Analysis Report Section F.4.3, "Post-Fire Safe Shutdown" states "Stainless steel instrument sensing lines and their supports have been analyzed to ensure that the lines will not fail as a result of the temperature increases resulting from potential fire conditions in the vicinity of the lines." In certain areas, the sensing lines are routed through areas which are estimated to have a localized fire loading which could result in support temperatures exceeding 1200°F. In these areas, the sensing line supports are protected by fire barriers." The team noted that this discussion did not address the performance of the instrumentation while the sensing lines were exposed to elevated temperatures.

Licensee Calculation NE-02-895-19, "Post Fire Safe Shutdown (PFSS) Analysis," Section Ik1, "Instrument Tubing Analysis," stated "The purpose of this evaluation is to determine the protection necessary to prevent PFSS instrument-sensing lines from providing erroneous readings resulting from elevated, fire induced, temperatures." The inspection team's review of this evaluation found it to be based on an unverified assumption. Specifically, "Since most of the lines are routed together, any increase in temperature will affect both lines the same, thus minimizing the transducer errors." The inspection team did not agree with this conclusion that the elevated temperatures would have no effect on instrument accuracy. The licensee could not provide a technical basis (calculation/engineering evaluation/test data) to support the validity of this assumption. The licensee has entered this finding into its corrective action program under Condition Report CR 2-06-02399.

Analysis: This finding is unresolved pending the completion of further inspection and completion of a significance determination. The licensee will perform an evaluation of the potential affects of fire on instrument sensing lines relative to the accuracy and reliability of the indications being relied upon for post-fire safe shutdown. The NRC will review the results of the licensee's efforts. This finding is potentially of greater than minor safety significance because it may impact the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (e.g., fire) to prevent undesirable consequences.

Enforcement: License Condition 2.C.(14) states, "The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in Section 9.5.1 and Appendix F of the Final Safety Analysis Report (FSAR) for the facility thru Amendment #39 and as described in subsequent letters to the staff through November 30, 1988, referenced in the May 22, 1989 safety evaluation and in other pertinent sections of the FSAR referenced in either Section 9.5.1 or Appendix F and as approved in the Safety Evaluation Report issued in March 1982 (NUREG 0892) and in Supplements 3, issued in May 1983, and 4, issued in December 1983, and in safety evaluations issued with letters dated November 11, 1987 and May 22, 1989 subject to the following provision:

"The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."

Final Safety Analysis Report Section F.4, "Fire Hazards Analysis"' states "The ability of the plant to attain and maintain post-fire safe shutdown is evaluated against the requirements of the following: . . . 10 CFR 50 Appendix R, Section III.G, Fire Protection of Safe Shutdown Capability." Contrary to this requirement, the licensee may not have adequately evaluated the potential affects of fire on the instrumentation sensing lines required for plant parameter monitoring during a post-fire safe shutdown. This issue was entered into the licensee's corrective action program under Condition Report 2-06-02399. This issue is unresolved pending the completion of further inspection of the results of the licensee's evaluation, determination of the extent of condition and completion of a significance determination: URI 05000397/2006008-03, Inadequate Evaluation of the Effects of Fire on Instrument Sensing Lines.

.8 Communications

a. Inspection Scope

The team reviewed the adequacy of the communication system to support plant personnel in the performance of alternative safe shutdown functions and fire brigade duties. The team verified that phones were available for use and maintained in working order. The team reviewed that the electrical power supplies and cable routing for the phone system would allow them to remain functional following a fire in the control room fire area.

b. Findings

No findings of significance were identified.

.9 Emergency Lighting

a. Inspection Scope

The team reviewed the emergency lighting system required to support plant personnel in the performance of alternative safe shutdown functions to verify it was adequate to support the performance of manual actions required to achieve and maintain hot shutdown conditions, and for illuminating access and egress routes to the areas where manual actions are required. The locations and positioning of emergency lights were observed during a walkthrough of the control room evacuation procedure.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed documentation to determine if any repairs were required in order to achieve cold shutdown. The team noted that the licensee did not require or credit the repair of equipment to reach cold shutdown based on the safe shutdown methodology implemented.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team reviewed the licensee's program for implementing compensatory measures in place for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems or features.

The team reviewed Procedures PPM 1.3.10, "Plant Fire Protection Program Implementation," Revision 29; PPM 1.3.10, "Active Fire System Operability and Impairment Control," Revision 11; and PPM 1.3.57, "Barrier Impairment," Revision 20 to determine whether the procedures adequately controlled compensatory measures for fire protection systems, equipment and features (e.g., detection and suppression systems and equipment, and passive fire barriers).

The team reviewed Procedures PPM 1.3.76, "Integrated Risk Management," Revision 5, and PPM 1.5.14, "Risk Assessment and Management for Maintenance/Surveillance Activities," Revision 15 to determine whether the procedures adequately controlled

compensatory measures for out-of-service, degraded, or inoperable equipment that could affect post-fire safe shutdown equipment, systems or features.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

a. Inspection Scope

The team reviewed a sample of condition reports and problem evaluation requests to verify that the licensee was identifying fire protection-related issues at an appropriate threshold and entering those issues into the corrective action program. A listing of condition reports and problem evaluation requests reviewed is provided in the attachment to this report.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

(Discussed) Apparent Violation 05000397/2003002-01: Failure to protect one train of low pressure coolant injection from the effects of a fire

In March 2003, the triennial fire protection inspection team questioned whether the licensee had ensured that one train of low pressure coolant injection systems remained free of fire damage from either the control room or the remote shutdown room. The licensee credited low pressure coolant injection for accomplishing reactor coolant inventory control and core cooling following a fire. The inspectors found that a fire in either Fire Area R-1 or Fire Area RC-10 could result in the substantial diversion of coolant from the core, during the low pressure coolant injection mode of operation, because of multiple hot short circuits.

During this inspection, the team evaluated the actions the licensee had taken in response to this apparent violation. Since the original inspection, the licensee had identified several other circuit configurations that could be affected by multiple spurious hot short circuits.

The team reviewed the licensee's actions to identify and locate similar circuit issues. The team also questioned the licensee's contention that their license basis only required them to analyze for a single spurious short circuit for 10 CFR Part 50, Appendix R, III.G.2 areas. This item will remain open until additional technical details are reviewed related to the routing of the circuits and to confirm the facilities license basis.

4OA6 Management Meetings

Debrief Meeting Summary

The team leader presented the inspection results to Mr. S. Oxenford, Vice President, Technical Services, and other members of licensee management at the conclusion of the onsite inspection on March 30, 2006.

During this meeting, the team leader confirmed to the licensee's management that no materials considered to be proprietary had been examined during the inspection.

Exit Meeting Summary

The team leader presented the inspection results to Mr. T. Lynch and other members of licensee management at the conclusion of the inspection in a conference call on July 13, 2006.

KEY POINTS OF CONTACT

Licensee

B. Adami, Technical Services Manager
J. Allen, Radiation Support Supervisor
S. Belcher, Manager, Operations
D. Bent, Technical Lead, Appendix R Analyses
B. Boyum, Assistant to Engineering General Manager
G. Brastad, Consulting Engineer
M. Cantrell, Operations Training Manager
D. Coleman, Manager, Performance Assessment and Regulatory Programs
G. Cullen, Licensing Supervisor, Regulatory Programs
F. Deperalta-Meister, Appendix R Consultant
K. Dittmer, Design Engineering Supervisor
J. Engbarth, Assistant to Vice President, Nuclear Generation
W. Harper, Fire Protection Supervisor, Design Engineering
A. Khanpour, General Manager, Engineering
G. Knudson, Operations Training Supervisor
W. LaFramboise, Manager, Design Engineering
T. Lynch, Plant General Manager
A. Moore, Operations, Control Room Supervisor
S. Mulkey, Engineer, Technical Services
R. Olson, Fire Marshal
S. Oxenford, Vice President, Technical Services
J. Sims, Fire Protection Supervisor
F. Schill, Engineer, Licensing
R. Torres, Manager, Quality and Corrective Action
D. West, Engineer, Fire Protection

NRC

R. Cohen, Resident Inspector
Z. Dunham, Senior Resident Inspector

ITEMS OPENED AND CLOSED

Opened

05000397/2006008-02	AV	Failure to Assure That the Effects of Fire Damage on the Reactor Protection System System Would not Preclude Manual Scram Capability (1R05.7.b(1))
05000397/2006008-03	URI	Inadequate Evaluation of the Effects of Fire on Instrument Sensing Lines (1R05.7.b(2))

Opened and Closed

05000397/2006008-01	NCV	Failure to Ensure Redundant Safe Shutdown Systems Located In the Same Fire Area Are Free of Fire Damage (1R05.2)

Closed

None

Discussed

05000397/2003002-01	AV	Failure to protect one train of low pressure coolant injection from the effects of a fire (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

The following documents were selected and reviewed by the team to accomplish the objectives and scope of the inspection.

COMPONENTS SELECTED FOR REVIEW

Component	Component	Component	Component	Component
MS-V-22A	MS-V-22D	RHR-P-2B	RHR-V-016B	RHR-V-049
MS-V-22B	MS-V-28A	RHR-V-08	RHR-V-017B	SW-P-1A
MS-V-22C	RHR-P-2A	RHR-V-09	RHR-V-040	SW-P-1B

CALCULATIONS

Number	Title	Revision
E/I-02-92-17	Medium Voltage 4.16KV and 6.9KV Electrical Distribution System Phase overcurrent relay settings	1
E/I-02-95-01	Overcurrent Protective Device Settings and Coordination for 480V Design System	1
E/I-02-01-01 BDC 95-0029-0A-840	Sizing Calculation for the PBX Plant Telephone System Replacement Battery (VRLA Type Cells)	1
NE 02-85-19	Post Fire Safe Shutdown (PFSS) Analysis	4
NE-02-94-35	System Impacts on Post Fire Safe Shutdown	2

CONDITION REPORTS (CRs)

2-04-03764	2-05-01285	2-05-09317	2-06-00382	2-06-02032*
2-04-04698	2-05-02896	2-05-09801	2-06-01824	2-06-02331*
2-04-05091	2-05-06938	2-05-09932	2-06-01923	2-06-02347*
2-04-05885	2-05-07195	2-05-09995	2-06-01963*	2-06-02392*
2-04-05944	2-05-07621	2-05-09996	2-06-01972*	2-06-02406*
2-04-06699	2-05-09057	2-05-09997	2-06-01979*	2-06-02419*
2-05-00359	2-05-09306	2-05-09998	2-06-01989*	2-06-05147*

*Initiated due to inspection activities.

DRAWINGS

Number	Title	Revision
Architect Drawing 901-00, Sheet 46	Alternate Access Point Power	0
D00292 (Sheet 36)	Fire Detection + Alarm System - Installation Diag.- R.+CB. El. 467'	0
D00292 (Sheet 46)	Fire Detection + Alarm System - Reactor Building Installation Diagram - El 471'-0" + El 501'-0"	C
EWD-1E048	Nuclear Boiler Systems Valve MS-V-22A (B22-F022A)	15
EWD-1E049	Nuclear Boiler Systems Valve MS-V-22B (B22-F022B)	16
EWD-1E050	Nuclear Boiler Systems Valve MS-V-22C (B22-F022C)	14
EWD-1E051	Nuclear Boiler Systems Valve MS-V-22D (B22-F022D)	13
EWD-1E052	Nuclear Boiler Systems Valve MS-V-28A (B22-F028A)	13
EWD-9E-002	Electrical Wiring Diagram: Residual Heat Removal System Pump RHR-P-2A Breaker RHR-CB-P2A	14
EWD-9E-002A	Electrical Wiring Diagram: Residual Heat Removal System Pump RHR-P-2A Breaker RHR-CB-P2A	1
EWD-9E-028	Electrical Wiring Diagram: Residual Heat Removal System MOV RHR-V-16B (E12-F016B)	21
EWD-9E-030	Electrical Wiring Diagram: Residual Heat Removal System MOV RHR-V-17B (E12-F017B)	15
EWD-58E-001	Electrical Wiring Diagram: Standby Service Water System SW-P-1A	35
EWD-58E-002B	Electrical Wiring Diagram: Standby Service Water System ESW-P-1A Breaker SW-CB-P1A	3
EWD-58E-003	Electrical Wiring Diagram: Standby Service Water System SW-P-1B	18
EWD-58E-004B	Electrical Wiring Diagram: Standby Service Water System SW-P-1B Breaker SW-CB-P1B	3
EWD-79E-001	Communication System Riser Diagram Reactor Building	16
EWD-79E-002	Communication System Riser Diagram Radwate Building EL 437'-0", 452'-0", 467'-0", and 487'-0"	14

EWD-79E-003	Communication System Riser Diagram Radwate Building EL 501'-0", 525'-0", and 531'-0"	22
EWD-79E-004	Communication System Riser Diagram Turbine Building, Diesel Generator Building, Transformer Yard and Misc Buildings	11
E502-2	Main One Line Diagram - Emergency Buses	52
E-503-6	Auxiliary One Line Diagram	84
E-503-8	Auxiliary One Line Diagram	83
FM 892-2	Fire Barrier and Fire Boundary Plan - Mezzanine Floors - El 467'-0" and 417'-0" and Misc Floors	9
FM 892-8	Sprinkler and Hose Station Plans - El 467'-0" and 417'-0" and Misc Floors	3
FM 892-12	Access Egress for PFSSD Activities, EL 437'-0", 441'-0", 467'-0", 471'-0" and Misc Floors	5
FM 892-13	Access Egress for PFSSD Activities, Operating Floor Plan for EL 501'-0", 441'-0", and 525'-0"	3
FM 892-14	Access Egress for PFSSD Activities Reactor Building Misc Plans	4
PFSS-1	Appendix R Post Fire Safe Shutdown (PFSS) Division 1 Boundaries One Line Diagram	5
PFSS-2	Appendix R Post Fire Safe Shutdown (PFSS) Division 2 Boundaries One Line Diagram	5
PFSS-3	Appendix R Post Fire Safe Shutdown (PFSS) Remote Shutdown Boundaries One Line Diagram	4
PFSS-4	Appendix R -Post Fire Safe Shutdown (PFSS) RHR & ADS System Alternate Shutdown Cooling Piping and Instrument Diagram	2
PFSS-5	Appendix R -Post Fire Safe Shutdown (PFSS) Nuclear Boiling System - Alternate Shutdown Cooling Instrument Diagram	2
PFSS-6	Appendix R -Post Fire Safe Shutdown (PFSS) Standby Service Water System Piping and Instrument Diagram	2
PFSS-7	Appendix R -Post Fire Safe Shutdown (PFSS) Radwaste Building Control & Switchgear Room HVAC	2
PFSS-8	Appendix R -Post Fire Safe Shutdown (PFSS) Reactor Building Emergency Cooling System HVAC	1

PFSS-9	Appendix R -Post Fire Safe Shutdown (PFSS) Standby Service Water Pumphouse & Diesel Generator BLDG HVAC	1
PS-3 (Sheets 1 - 4)	Penetration Seal Typical Detail Silicone Foam in Sleeve or Corebore Type 3, 6" SF w/ 1" CF Dam or 9" SF w/out Dam	0
PS-20 (Sheets 1 - 2)	Penetration Seal Typical Detail Bisco Fire Plug in Spare Sleeve or Corebore	0
012X005A	Dual Lite, Chart, PRC Battery Sealed Lead Calcium 6 + 12 V	C

ENGINEERING REPORTS

Title	Date
Energy Northwest Summary of RIS 04-03 Multiple Spurious Circuit Analysis and Request for Enforcement Discretion	3/14/2006
Manual Action Feasibility Review	02/03/2006

FIRE PROTECTION ENGINEERING EVALUATIONS

Number	Title	Revision
FPE 1.1	Fire Rated Penetration Seals	0
FPE 1.11	Qualification of Whittaker MI Cable as a 3-hour Raceway Fire Barrier	2
FPE 2.15	Systems Surveillance & Trending	2
FPE 4.1	Allowed Outage Times and Compensatory Measures for PFSS SSC's	0

PROBLEM EVALUATION REQUESTS (PERs)

203-3113	203-3472	204-0095	204-1081
203-3221	203-3914	204-0941	

PROCEDURES

Number	Title	Revision
ABN-CR-EVAC	Control Room Evacuation and Remote Cooldown	8

ABN-FIRE	Fire	12
FPP 1.4	Fire Protection Files and Engineering Evaluation Control	2
FPP 1.5	Fire Protection Procedures Manual - Equipment Performance Trending	3
FPP 1.8	Fire Protection System Compensatory Measures	2
ISP-CMS-B305	Remote Shutdown Monitoring Suppression Chamber Channel Calibration (1/10/2005 Performance)	2
ISP-CMS-X301	Remote Shutdown Drywell Temperature Channel Calibration (1/11/2006 Performance)	1
ISP-CMS-X312	Remote Shutdown Suppression Chamber Water Temperature (9/26/2005 Performance)	2
ISP-CMS-X313	Remote Shutdown Drywell Pressure Hi Range Channel Calibration (7/21/2005 Performance)	2
ISP-CMS-X314	Remote Shutdown Drywell Pressure Low Range Channel Calibration (7/21/2005 Performance)	1
ISP-CMS-X315	Remote Shutdown Suppression Chamber Air Temperature Channel Calibration (7/27/2005 Performance)	2
ISP-RHR-X321	Remote Shutdown RHR System Flow Channel Calibration (11/17/2005 Performance)	2
ISP-SW-X301	Remote Shutdown Standby Service Water Pump B Discharge Header Pressure Channel Calibration (8/24/2005 Performance)	3
ISP-SW-X302	Remote Shutdown Spray Pond B Temperature Channel Calibration (11/16/2005 Performance)	1
ISP-SW-X307	Remote Shutdown (Alternate Remote Shutdown) Standby Service Water Pump A, Discharge Header Pressure (01/02/2005 Performance)	3
OSP-INST-B701	Remote Shutdown Panel Operability (06/08/2005 Performance)	9
OSP-INST-B702	Alternate Remote Shutdown Panel Operability (6/01/2005 Performance)	7
OSP-INST-B705	RCIC Remote Shutdown Operability Test (5/25/2005 Performance)	2

OSP-INST-M101	Remote and Alternate Shutdown Panel Check (3/15/2006 Performance)	8
PPM 1.3.1	Operating Policies, Programs, and Practices	71
PPM 1.3.10	Plant Fire Protection Program Implementation	29
PPM 1.3.10B	Active Fire System Operability and Impairment Control	11
PPM 1.3.43	10CFR50.59 Safety Evaluation Control No. 95-024 (Implementing Doc. No. FPF 2.15 Item 1)	7
PPM 1.3.47	Fuse Replacement Control	10
PPM 1.3.57	Barrier Impairment	20
PPM 1.3.76	Integrated Risk Management	5
PPM 1.5.14	Risk Assessment and Management for Maintenance/Surveillance Activities	15
PPM 15.1.22	Plant Fire Extinguisher and Foam Cart Inspections	09/19/05
PPM 15.1.22	Annual Plant Portable Fire Extinguisher Inspection	03/22/05
SPIP SEC-07	Security System Emergency Building Unlock	2
SWP-LIC-03	Licensing Document Change Process	8
10.25.64	Emergency Lighting	12

MISCELLANEOUS DOCUMENTS

Number	Title	Revision
Audit Report: AU-FP-04	Quality Services Audit Report - Fire Protection Program	2004
Audit Report: AU-FP-05	Quality and Corrective Action Audit Report - Fire Protection Program Audit	2005
DRD 209	Design Specification for Division 200, Section 209, Post Fire Safe Shutdown Requirements	1
Energy Northwest Memorandum	Interoffice Memorandum from AG Hosler, Manager WNP-2 Licensing, Record of Telecon - Proposed Use of Portable Lighting for Fire Protection 5/14/1992	5/15/1992
Energy Northwest Memorandum	Interim Actions for CAS/SAS in the Event of a Control Room Fire	3/17/2006

Engineering Standards Manual EES-5	General Fuse Selection Criteria and the Electrical Protection of 460 VAC and 125-250 VDC Motors	5
FPSA-1-RE-0001	Fire PSA Qualification and Result	1.1
FPSA-2-IE-0001	Fire PSA Initiating Events	
FSAR - 9.5.1	Final Safety Analysis Report - Section 9.5.1 - Fire Protection Program	thru Amend-ment 39
FSAR - Appendix F	Final Safety Analysis Report - Appendix F - Fire Protection Evaluation	thru Amend-ment 39
FSAR - Appendix F	Final Safety Analysis Report - Appendix F - Fire Protection Evaluation	thru Amend-ment 58
LER 92-018-00	Inadequate Emergency Lighting and All Required Operator Actions Following a Fire Outside of the Control Room Not Included in Procedures - Less Than Adequate Design/Communication	5/28/1992
NFPA 10	Standard for Portable Fire Extinguishers	1975
NFPA 14	Standard for the Installation of Standpipe and Hose Systems	1974
NFPA 72E	Standard on Automatic Fire Detectors	1974
NRC Inspection Procedure 71111.05T	Fire Protection (Triennial)	02/18/05
NRC Letter	WNP-2 FSAR Amendment 37 (TAC No. 63528)	11/11/87
NRC Letter	Approved Fire Protection Program at WNP-2 (TAC 63528)	5/22/89
NRC Letter GI2-89-051	Issuance of Amendment No. 67 to Facilicty Operating License No. NPF-21 - WPPSS Nuclear Project No. 2 (TAC No. 64655)	5/25/89
NUREG-0892	Safety Evaluation Report related to operation of WPPSS Nuclear Project No. 2	March 1982
NUREG-0892, Supplement No. 3	Safety Evaluation Report related to operation of WPPSS Nuclear Project No. 2	May 1983

NUREG-0892, Supplement No. 4	Safety Evaluation Report related to operation of WPPSS Nuclear Project No. 2	December 1983
SD000137, Volume 5, Chapter 1	Control Rod Drive Mechanism	12
SD000142, Volume 5, Chapter 2	Control Rod Drive Hydraulic System	12
SD000177, Volume 3, Chapter 2	Fire Protection	11
SD000186, Volume 7, Chapter 5	Automatic Depressurization System	10
SD000198, Volume 7, Chapter 4	Residual Heat Removal System	11
WNP-2 Letter GO2-82-344	WNP-2 Summary of Conformance Nuclear Regulatory Commission Regulations 10CFR 20, 50 and 100	3/26/82
WNP-2 Letter GO2-82-571	Nuclear Project No. 2 Fire Hose/ Standpipe Modifications	6/30/82
WNP-2 Letter GO2-86-613	Nuclear Plant No. 2 Operating License NPF-21 Fire Protection Program Request For Additional Information	6/30/86
WNP-2 Letter GO2-86-615	Nuclear Plant No. 2 License No. NPF-21, License Condition (14), Fire Protection Program	7/01/86
WNP-2 Letter GO2-86-656	Nuclear Plant No. 2 Operating License NPF-21, Final Resolution of Hi/Low Pressure Interface Concern	7/16/86
WNP-2 Letter GO2-86-859	Nuclear Plant No. 2 Operating License NPF-21, WNP-2 Fire Protection Program, Appendix R Calculation for Alternate Shutdown from Remote Control Room Utilizing Six Main Steam Safety Relief Valves	9/09/86
WNP-2 Letter GO2-86-1049	Nuclear Plant No. 2 Operating License NFP-21 WNP-2 Fire Protection, Request For Additional Information	12/01/86
WNP-2 Letter GO2-87-001	WNP-2 Fire Protection Program Revaluation	01/02/87
WNP-2 Letter GO2-87-034	Nuclear Plant No. 2 Operating License NPF-21 Fire Protection Program	01/29/8

WNP-2 Letter GO2-87-046	Nuclear Plant No. 2 Operating License NPF-21, Request for Amendment to Licensing Condition 2.C. (14), and Removal of Fire Protection Requirements From Technical Specifications	02/10/87
WNP-2 Letter GO2-88-163	Nuclear Plant No. 2 Operating License NPF-21 Approved Fire Protection Program	7/26/88
WNP-2 Letter GO2-89-050	Nuclear Plant No. 2 Request For Amendment to License Condition 2.C. (14) and Removal of Fire Protection Requirements From Technical Specifications, Supplemental Information	3/31/89
WNP-2 Letter GO2-95-013	WNP-2, Operating License NPF-21 Revision to Procedures For Control Room Fires	01/25/95
Self Assessment/Benchmark Planning Report SA-2004-0079	Fire Protection Recovery Plan	2004
Self Assessment/Benchmark Planning Report SA-2005-0101	Fire Protection Program per NRC 71111.05	12/31/2005
0601441	Dual-Lite Spectron Series Emergency Lighting Equipment Instructions for Installation, Operation, Maintenance	2/96
	CARPS - Cable and Raceway Computerized Routing Data	
	Fire Brigade Drill Critiques from 01/2003 to 04/2006	
	Master Equipment List - Excel Spreadsheet	
	Penetration Seal Data Form - Seal ID: C206 - 3040	
	Penetration Seal Data Form - Seal ID: C211 - 1001	
	Penetration Seal Data Form - Seal ID: C211 - 1002	
	Penetration Seal Data Form - Seal ID: R206 - 5087	

MODIFICATIONS

Number	Title	Revision
EC 4307	Wittaker Cable Support Replacement - PFSS	0
95-0029-0A	PFSSD Communication Upgrade	0

WORK ORDERS

01097361 01	01088350 01	01107136 01	01100146 01